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REMARKS

Applicants appreciate the consideration shown by the Office as evidenced by the Final Office Action mailed on May 03, 2007 and the Advisory Action mailed on July 16, 2007. The Examiner maintained as rejected claims 47-61. Claims 1-61 are pending in the present patent application. In this response claims 47-51, and 54-58 have been amended. Applicants respectfully request favorable reconsideration in light of these amendments and the following remarks.

Claim Amendments

The May 3rd, 2007 office action has been carefully considered. After such consideration, claims 47-51, and 54-58 have been amended. The claims are amended to recite that a neutral templated mesoporous network is formed within the matrix material. The support for the amendment may be found in paragraph [0032] of the specification and in the reference incorporated in the application "P.Tanev and T. Pinnavaia, Science, 267 (1995) pp. 865-867".

Claim Rejections

Claims 47-60, 62 are rejected as being anticipated under 35, U.S.C. 102(e) by Chao et al., U.S. Patent Application No. 2003/0152759 (hereafter "Chao"). A prima facie case of anticipation under 35 U.S.C. § 102 requires a showing that each limitation of a claim is found in a single reference, practice or device. In re Donohue, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985). Claim 61 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Chao in view of Pham et al., U.S. Patent No. 6,548,440 (hereafter "Pham"). Applicants respectfully request favorable reconsideration in light of the above amendments and the following remarks.

Amended claim 47 recites a method of making a ceramic composite that is thermally and structurally stable upto about 1000°C, comprising a neutral mesoporous matrix and nanoparticles comprising at least one group IVB metal oxide. The neutral mesoporous matrix comprises a ceramic matrix and has a plurality of pores dispersed

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therethrough. The plurality of pores form a neutral mesoporous network, and an array of ceramic nanoparticles templated within the neutral mesoporous network, wherein the ceramic nanoparticles comprise at least one group IVB metal oxide, and each of the plurality of ceramic nanoparticles has at least one dimension of less than about 100 nm. The array forms an ordered structure within the neutral mesoporous network. The method comprises the steps of: providing a ceramic matrix material; forming a neutral templated mesoporous network within the matrix material, wherein the neutral mesoporous network has a controlled pore size; infiltrating the neutral templated mesoporous network with an oxide precursor; and converting the oxide precursor into inorganic nanoparticles within the neutral templated mesoporous network to form the ceramic composite. The support for the amendment may be found in paragraph [0032] of the specification.

"In one embodiment, the templated mesoporous network is formed by a neutral templating synthesis route"

As known in the art, templates formed by neutral templating synthesis route form neutral mesoporous structures, unlike charged templates formed during ionic templating methods. Additional support for this may be found in the reference incorporated in the application: "P.Tanev and T. Pinnavaia, Science, 267 (1995) pp. 865-867".

"We propose that the formation of our silica mesostructures occurs through the organization of the surfactant molecules into neutral rodlike micelles."

Applicant respectfully submits that Chao does not anticipate the amended claim. Chao does not disclose forming a neutral templated mesoporous network as claimed herein. Chao discloses forming mesoporous structures by ionic templating methods (Examples 1-14). The method of Chao further involves functionalizing the mesoporous material before infiltrating the precursor material.

The process involves functionalizing the mesoporous materials to bear charged functional groups on the pore surface of mesoporous host, followed by mixing the functionalized host with oppositely charged molecules to form nanostructured materials.

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Thus the mesoporous materials into which the precursor material is infiltrated are not neutral, but bear a charge depending on the functional group attached to the pore walls. The Examiner comments in the Advisory Action that Chao cites silica as mesoporous host material. But the mesoporous host materials disclosed in Chao are essentially functionalized before infiltrating them with the precursor material. Therefore, Chao does not anticipate infiltrating the neutral templated mesoporous network with an oxide precursor; and converting the oxide precursor into inorganic nanoparticles within the neutral templated mesoporous network to form the ceramic composite.

Chao further teaches away from one using neutral or un-functionalized mesoporous materials to infiltrate precursor material, as it would not lead to high loading of the precursor into the mesoporous structures (paragraphs [0005], [0006], and [0007]). Chao repeatedly stresses on the advantages of functionalizing the pore walls of the mesoporous materials to utilize the long-range electrostatic interaction of the charged molecules on the pore walls with infiltrated molecules to enhance high precursor loading. Thus on fair reading of Chao would not motivate an ordinary skilled in the art to utilize "neutral templates" for such purposes. Because Chao does not disclose each and every limitation of the Applicants' claimed invention, the rejection of claims 47-60, 62 may not properly be made under 35 USC 102(e). In particular, the reference fails to disclose, teach, or suggest a method involving "forming a neutral templated mesoporous network within the matrix material, wherein the neutral mesoporous network has a controlled pore size; and infiltrating the neutral templated mesoporous network with an oxide precursor." Thus, the Applicants respectfully request that the rejection of claims 47-60, and 62 under 35 USC 102(e) as anticipated by Chao be withdrawn. Independent claim 54 and its depended Claims 55-61 are believed to be allowable for the same reasons as Claim 47. Favorable reconsideration is requested.

Claim 61 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Chao in view of Pham et al., U.S. Patent No. 6,548,440 (hereafter "Pham"). As discussed above Chao does not does not disclose, teach, suggest, or motivate "forming a neutral templated mesoporous network within the matrix material, wherein the neutral mesoporous network has a controlled pore size; and infiltrating the neutral templated mesoporous network with

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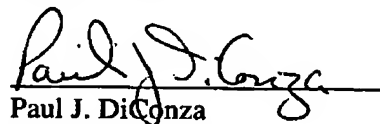
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an oxide precursor." Thus claim 61 is patentable over Chao in view of Pham et al. Further, claim 61 being a dependent claim of an allowable independent claim 54 is allowable.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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